Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

Galloway BJ 1913
1
P69C
cp 3

U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY—Circular No. 117.

B. T. GALLOWAY, Chief of Bureau.

RECEIVED
MAY 8 1913
DEPT. OF AGRICULTURE

MISCELLANEOUS PAPERS.

The Bureau of Plant Industry, Its Functions and Efficiency . . B. T. GALLOWAY

The Relation of Agricultural Extension Agencies to Farm Practices { C. BEAMAN SMITH and K. H. ATWOOD

Issued March 15, 1913.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1913.

BUREAU OF PLANT INDUSTRY.

Chief of Bureau, BEVERLY T. GALLOWAY.
Assistant Chief of Bureau, WILLIAM A. TAYLOR.
Editor, J. E. ROCKWELL.
Chief Clerk, JAMES E. JONES.

THE BUREAU OF PLANT INDUSTRY, ITS FUNCTIONS AND EFFICIENCY.[1]

By B. T. Galloway, *Chief of the Bureau of Plant Industry.*

The Bureau of Plant Industry has entered upon the second decade of its work, and it would therefore seem a fitting time to briefly review its past activities and in the light of lessons learned to indicate, so far as lies within our power, some of the directions of its future functions and the basis for the efficiency of these functions.

Those of us who have been connected with the Government for so long that we refer to length of service by decades rather than years will recall the struggles and difficulties of the earlier periods—struggles and difficulties as to the rights and privileges of the scientific worker, struggles and difficulties as to funds and equipment, the rights of property so far as they relate to discoveries, and the rights of the individual so far as they relate to securing to him unhampered opportunities for growth in his chosen field. Our younger men can hardly imagine a condition which carried with it the idea that their entire work was to have no recognition. They can hardly conceive of a state of things that would permit of their scientific discoveries being taken by their superior officers and used as a matter of course, without credit of any kind. And yet this was the custom and the practice 26 or 27 years ago, just prior to the organization of the State agricultural experiment stations in the United States. The passage of the Hatch Act, resulting in the establishment of the State experiment stations, gave the first great impetus to agricultural research in the United States, created an immediate and widespread demand for men, and gave those who desired to see the widest freedom for scientific work an opportunity to put into effect policies completely overturning the old views and the practices followed for so many years. A great many of these questions had been worked out prior to the reorganization of the department, something over 12 years ago, although even at that time there were grave doubts whether any large organization of scientific workers could be developed under our system of Government without danger of more or less autocratic control. We have always had faith that this could be done, and the

[1] Issued Mar. 15, 1913.
Presented Feb. 28, 1913, as one of a series of lectures before the scientific staff of the Bureau of Plant Industry.

best answer, perhaps, is to be found in the organization of the Bureau of Plant Industry as it stands to-day. That the original basic and fundamental thought governing our development has been kept in mind will be understood when we refer to a statement published 13 years ago. In speaking of the affiliation of allied lines of work in the department, it is stated that—

> The development of the department during the last few years has been rapid, and a study of the conditions existing therein leads to the belief that the time is at hand for a movement toward bringing together the related lines of work. It is fully recognized and appreciated, however, that whatever is accomplished in this direction must come through the harmonious action of all concerned and a full conviction that the opportunities for broader lines of work will be increased. In the past the tendency has been to segregate the work to such an extent as to make it difficult to bring about close cooperation along the broadest lines possible. There can scarcely be any doubt at this time that the best interests of the entire department would be subserved by aggregation rather than segregation, but all advances along this line must be made in such a way as to give the broadest opportunity for the development of each division without in any way interfering with its integrity or organization. The future success of the department will depend in large measure on each man being made to feel a personal responsibility as to the details of his work and at the same time realize that he must lend his full support to matters of general policy which concern the division of which he is a member and the department as a whole. The broader plan, and one which it seems perfectly feasible to carry out, has for its object the arrangement of the work in such a close cooperative way as to bring the strongest support from every division interested. Aside from the mere question of close cooperation and the possibility of undertaking many problems not feasible under the present plan existing in the department, the intimate relation of the various allied groups would bring the investigators into more sympathetic union. Such a union can not help being advantageous to all concerned, and if recognized in the proper spirit will go far toward advancing the best interests of the department.
>
> It would seem to me that whatever success we have attained as a scientific organization had its origin in the policy set forth above, in which the individual worker is given wide freedom of action as to matters of detail in his particular field and at the same time is encouraged to lend his best support to all matters of policy concerning the bureau as a whole.
>
> It may be well that I pause at this point long enough to emphasize the fact that the Bureau of Plant Industry is an institution representing in its organization, its methods of work, its general policies, and its accomplishments the wisdom of many men. Some of these men have devoted the best part of their lives to the work, and I feel that all are giving the very best that is in them to the department and to the bureau.
>
> With these introductory statements before us we may now consider the broad question as to the future field of the activities of the bureau, its functions, so to speak, and what appear to be the necessary steps to bring about the greatest efficiency in performing these functions. Broadly speaking, the functions of the bureau are (1) to acquire knowledge concerning the fundamental principles governing crop production and crop utilization and (2) to apply this knowledge in such places and in such manner as shall bring the greatest good to the greatest number. This may seem like a rather broad charter, but its limitations will appear as we proceed.

It will be seen that our functions fall primarily into two groups, namely, those of an investigational nature and those of an instructional character. It should be borne in mind that in the use of the word "instructional" we do not refer to teaching in the ordinary pedagogic sense, but rather to the bringing home to the farmer of the information acquired through research, experiments, and in other ways. We would therefore eliminate at this point two fields of activity, one of which has fallen to the lot of other bureaus, while the other has been occasionally urged upon various branches of the Government. I refer to regulatory or police duties and the duties that would be involved in case of the organization in Washington of anything in the nature of a national university requiring lectures to students on the part of our men along the lines of their fields of research. It has always seemed to me that regulatory or police duties as they must necessarily be conducted by the Government and the giving of such lectures to bodies of students are incompatible with the best and most effective scientific work, such as is demanded of the department men. I do not wish this to be understood as a sweeping statement applicable to all institutions alike, but I do think it peculiarly applies to the Department of Agriculture, where opportunity is given research workers to come in close contact with those from whom inspiration may be drawn.

Research, therefore, must constitute the corner stone of our structure—research, furthermore, unhampered by the necessity of fitting it into any scheme of regulatory or teaching functions. Here, again, we are confronted with another vital issue, and that is the proper appreciation of the aims and objects of research as it should be considered by us. There would seem to be no place in the department, or anywhere else, for that matter, for what has from time to time been known as science for science's sake. To work for the discovery of truth for the mere pleasure of looking at it and admiring it as truth is, to say the least, an anomaly in this age. It appears, therefore, that we are particularly concerned in the discovery of principles; and this leads us to the next step, namely, the working out of proper methods of applying these principles, that is, experimentation.

Finally, we are concerned with the application of the most promising results from both research and experimentation in ways that will best serve to secure their full value. The problems connected with organization and coordination in the field of research are not difficult, nor is it difficult to connect research with experimentation. From here on, however, we are confronted with numerous questions as to the best methods of getting the acquired information to the people. I think it may properly be said that the Bureau of Plant Industry, or at least some of its original units, was the pioneer in

developing and applying through publications the demonstration idea in support of its propaganda work. Twenty-five years ago we found it necessary to inaugurate demonstration work in connection with the treatment of various plant diseases, and the same general plan, with such necessary variations and improvements as have been called for by changes in our conception of work, is being followed to-day in connection with a great many of our projects.

It would seem, therefore, that our three main functions, our three main groups of activities, are research, experimentation, and demonstration. The last may assume many forms, but its primary object is to bring home to the man on the land an object lesson in such a way that he is given a new point of view and is brought to a realization of the fact that he has that within him necessary to help himself—to help himself in the reorganization of his farm, in the reshaping of his rotations, in the introduction and utilization of new crops, in the prevention of diseases of various kinds, or in whatever way he may consider it necessary to make himself a better farmer.

To make this work most effective I believe it must be coordinated with the extension service of the colleges in the respective States wherever this is practicable. I believe, furthermore, that the proper agencies to reach the last man on the farm are the agricultural colleges through various forms of extension service that will eventually be developed. That there is a promising and important field here is patent to every thinking man, but as yet it is not organized. There are those, I know, who believe that the farmer can not be materially helped by such means, but the fact that he has been and is being helped is so self-evident that further argument on this point is unnecessary. Just now the demand is pressing for this kind of work, and for the moment the further need for research and experimentation may be somewhat obscured. I see no cause for alarm in the situation, as it will right itself when the people fully understand it. The people are demanding help, and if it is to be given through extension service this work should be organized and supported.

It may be well at this point to call attention to a report of the committee appointed by the Association of Agricultural Colleges and Experiment Stations to consider the whole question of extension service in its relation to helping the farmer. The last report was made at the meeting of the association held at Atlanta. The committee groups its general work in extension service under three heads: (1) Systematic instruction, (2) informal teaching, and (3) organization of rural communities. Under each of these heads are several subheads dealing with such questions as the movable school, the correspondence course, the lecture and reading course, the study club, boys' and girls' clubs, conventions and lectures, farmers' institutes

and farmers' week, farmers' conferences, demonstrations, railway specials, exhibitions, educational excursions, etc. The committee, commenting on the outline, says:

> This type of work is so fundamental in its relationship to agricultural prosperity that no student of the situation can but be convinced that the work itself must expand largely and go on for all time. The only question is, Who is going to do it? Is it to be the agricultural colleges or are other agencies to perform it?
>
> It is true that there are those who say that we can not hope to reach the hundredth man on the farm; that the most we can do is to train leaders at the colleges, and then through agricultural departments of high schools and such means as the agricultural press, various agricultural societies, etc., let the modern knowledge percolate down as far as it may.
>
> Your committee believes that this doctrine is essentially undemocratic. We believe that the attempt should be made to reach the last man on the land, not primarily because of a sentimental regard for that last unfortunate man but because it is absolutely essential in the conservation of soil resources that the intelligence of soil tillers be conserved.
>
> The land in America devoted to agriculture is in the hands of some seven or eight million different men. A large proportion of these men are owners of the land, who have the power to determine whether the land shall be used properly or whether its fertility shall be encroached upon. They can not be compelled by law to take proper care of their land. They will care for it properly only as they are educated to the level of an appreciation of the importance of right farming to themselves and to their posterity.
>
> There is another element in the situation. The character of our agricultural population is constantly changing. The foreigner, ignorant of our language and often ignorant of the best types of farming, is gradually crowding out the old American farmer. In other words, we have a perpetually flowing current of new soil workers that must be brought to understand the best methods of farming.
>
> And then, too, we are making such rapid strides in our knowledge of agricultural science that even the graduates of agricultural schools and colleges will need to continue their studies. The time is coming when the extension service of the agricultural college will devote a considerable portion of its time to correspondence—teaching the better educated farmers, who will avail themselves of this opportunity to keep themselves abreast of the times. This suggests that even if the attempt to reach the great masses of the farmers be given over to other agencies, the extension service of the agricultural college could find ample scope for its energies in the higher forms of extension teaching.

It will appear, I think, from the discussion up to this time that we have been shaping a point of view rather than an arbitrary conception as to what properly falls within our field of activity. We are fairly clear as to our field in research, experimentation, and demonstration as applied to regional problems, but in all of this educational work or extension service the best we can do for the present is to endeavor to get the proper point of view and hold to that. This point of view is that the educational work should be conducted by the State institutions, for the reason that they are, or should be, closer to the people on local questions than we are. At the same time the fact should not be

lost sight of that problems have arisen and will continue to arise which, while actually local, concern the whole or a large part of the commonwealth, such as the boll-weevil problem of the South, the chestnut-tree bark disease problem, or, to draw examples from other bureaus, the cattle-tick problem, the gypsy-moth problem, and others of a similar nature. In cases of this kind national interests are at stake, and the Federal Government should act promptly and continue to act until the emergency is past.

In our research activities and in our experimentation there would appear to be no necessity for close relationship with State institutions, except in so far as to avoid duplication of work and an unwarranted transgression on the rights of colleagues engaged in problems similar to our own. In our demonstration work, however, I think we should strive to operate through the recognized avenues within the State, and these are, first, of course, the agricultural colleges and experiment stations. As coordinated branches of the Government service it is proper and just that in all cases where work is to be done within the States, the State agricultural colleges and experiment stations should have first consideration, only passing to other institutions when relations with the first two can not be established.

After more than two decades of effort, public sentiment is now aroused as to the necessity for doing all sorts of things for the farmer. Merchants and bankers, ministers and lawyers, are vying with each other in their anxiety to give the farmer help. In true American fashion we are rushing, or being rushed, into procedures and forms of activity many of which are open to doubt as to their real effectiveness and permanent value in upbuilding agriculture. It would seem highly important that as an organization we endeavor to keep our vision unobstructed and not allow it to become clouded by the many things being proposed from all sides. We might liken the American farmer to a man lost in a maze of city streets who receives so many complex and conflicting instructions that he is more bewildered as he proceeds and endeavors to find his way. If he had been told, perhaps somewhat dogmatically, what to do in the first place, he would in all probability have reached his destination without difficulty. The great success of the bureau's efforts in the South through the farmers' cooperative demonstration work lies in the almost dogmatic reiteration of a comparatively few simple fundamental truths.

Just here it may do no harm to speak a word of warning regarding these various agencies that have so quickly sprung into prominence. I think it behooves the bureau to go very cautiously in the matter of establishing relationships with some of these agencies. Those behind the movements are well meaning, but as a rule they have been associated with activities so radically different from those belonging to

an agricultural college or this department that the people may unintentionally be misled into believing that immediate results are to be expected from certain types of propaganda work. Already we are meeting signs of impatience on the part of some of these agencies that have indicated a desire to cooperate with us. They are not getting as prompt results as they had anticipated. Their previous training had led them to the conviction that the expenditure of money in certain directions would bring immediate results, as it nearly always does in connection with measurable matters, such as the construction of a railroad, the building of a creamery, or work of that kind. Progress in agriculture is difficult to measure. In fact, it has been the fashion of some of our friends who deal with statistics to call attention to the apparent lack of increase in the average production of the various crops in this country. It has also been the fashion for these same friends to point to the average low yields and the individual high yields secured by certain men as illustrative of what might be accomplished if the general average could be raised ever so little. As a matter of fact, when we come to study carefully the tendency of crop yields in this country they appear to be on the increase. Our Bureau of Statistics has pointed out the fact that there was a tendency toward lower yields during the seventies and eighties, but during the last 20 years the tendency has been the reverse; that is, although the yield per acre has varied widely from year to year, owing to the vicissitudes of the seasons, nevertheless when the averages of a number of years are grouped together there appears a gradual tendency upward in the average yield per acre. This average upward tendency is very, very slow and very, very small, all of which shows how important it is to proceed very cautiously in the matter of propaganda work and not lead the farmers to believe that revolutions in crop production are to be accomplished in a year or in a decade. Whether many of the agencies that are now so actively showing interest in the farmers' work will be content with this apparently slow increase remains to be seen. Anyway, the fact remains that we should proceed along our chosen lines with due caution and not permit ourselves to be stampeded by the hurry and rush for immediate results.

We have now discussed in general terms what would appear to be some of the principal functions of the Bureau of Plant Industry and have indicated the relationships that must be maintained between our own and other Government organizations, as well as those that must be maintained between ourselves and the States. We may then properly pass to the second phase of our subject, viz, the efficiency of our organization and the basis upon which efficiency must rest. It may be well to add parenthetically at this point that we are discuss-

ing the functions and efficiency of the Bureau of Plant Industry alone. If we were discussing the functions and efficiency of the department as a whole, it would, of course, be necessary to treat our subject in a different way. The department has an effective organization, which must necessarily change from time to time to meet exigencies as they arise. The Bureau of Plant Industry, it is hoped and believed, will remain an important part of the department's work, but it must always be kept in mind that proper relationships with other bureaus must be maintained.

Returning to the question of efficiency, efficiency has recently been defined by Mr. Harrington Emerson as the relation between an equitable standard and an actual achievement, or the relation between what is and what could be. In his book on the Twelve Principles of Efficiency he has written largely from the standpoint of the engineer, but some of the principles of efficiency which he lays down are applicable, it seems to me, to our needs. They are:

1. Clearly defined ideals.
2. Common sense.
3. Competent counsel.
4. Discipline.
5. The fair deal.
6. Efficiency reward.

No institution such as ours can long survive or succeed unless its ideals are clearly defined. For any one man to expect to dictate these ideals is fatal to the whole structure. Such a policy will force those removed from the head to develop ideals of their own, with the result that all unity of purpose will soon be lost. There is the ideal of sacrificing one's personal feelings for the service as a whole, of giving up some of one's individuality in order to accomplish greater objects through teamwork and community effort. Mr. Emerson speaks of a handy man in a railroad shop who was required to examine cylinders for cracks. The cracks were often so unimportant that they could be safely repaired by a patch, but in other cases a new cylinder had to be ordered. A patch cost $30; a new cylinder, $600. The handy man swelled with pride when his recommendation for a new cylinder was heeded. He boasted to his wife and fellows of the confidence placed in him and the importance of his work. When in doubt he reported always in favor of a new cylinder, and it was easier to accept his recommendation than to institute a separate revisional examination to be made by a man scarcely better qualified. The ideals of economy and competence were submerged here and the conflicting ideal of individual aggrandizement substituted.

We should beware lest in our zeal we see only the $600 cylinder and its immediate effects. Let us not lose sight of the fact that in the long run a sacrificing of self-interest will most certainly benefit

both the individual and the work as a whole. As our work progresses we are coming more and more to see that the future holds for us higher ideals in the matter of teamwork. We are coming more and more to see the necessity of attacking our problems as great crop problems rather than as different phases of crop problems. We have already had some striking illustrations in the bureau of the success of team effort. The work of Mr. Powell in connection with the harvesting, storing, and marketing of fruits is an example of efficient team service. Another example is found in connection with our southwestern cotton work. More and more our ideals should lead us to develop these teams around crop problems, and while there seems no doubt that this effort will constantly increase efficiency there can be no good reason for fearing that it will take away in any degree that feeling of recognition and reward which is due every earnest worker.

Common sense as an efficiency principle may hardly seem worthy of note in work such as ours, but when we come to consider what common sense is we are met at once with the fact that common sense is in reality very uncommon sense and is, or should be, one of the fundamental precepts in guiding our actions. Again applying Mr. Emerson's definitions, we have two kinds of common sense—a near common sense and a supernal common sense. Twenty-six years ago a gentleman then connected with the Department of Agriculture advanced the argument that it would be against the principles of economy to organize any further branches or divisions in the department. His opposition was largely based on matters of economy that had to do at that time with the early development of our plant-disease work. The then Commissioner of Agriculture overruled this man with a near common sense for immediate economy, and the work on plant diseases was organized. The Commissioner of Agriculture was a man of supernal common sense, who viewed a situation from a mountain top, as it were, and it is this grasp of vision that makes the difference between the two types of men. It was this gift of supernal common sense that led to the establishment of the agricultural experiment stations, the reorganization of the Department of Agriculture, and the passage of the Adams Act.

An organization such as ours can not long exist and do its best work without competent counsel and proper discipline. Competent counsel must come from all men, and the more this is recognized by the officials the greater and broader will be the opportunity for the presenting of ideas, and ideas after all form the basis for nearly all constructive effort. One of the mistakes likely to be made in the development of bureaus, both as to counsel and discipline, is that laxity of purpose

which permits the gradual encroachment of so-called precedents and forms upon real progressive action. The work of the bureau constantly leads into uncharted and untried fields. No man imbued with the true scientific spirit can successfully progress in an atmosphere where every move is to be weighed in the scales of precedent and handled as if it were a case in a court of law. Statute law and scientific progress are in a measure incompatible, or perhaps I should say that the ordinary legal mind finds it difficult to recognize the driving force which impels every scientific worker to break precedents in the search for truth. We shall need competent counsel and we shall need discipline to constantly keep to the front the fact that in our legal affairs and in our fiscal affairs we are simply using these forces as a means to an end. We need the help and counsel of these branches of the service, but we need to be free to judge how to receive and apply this help.

There has been a tendency of late to apply to institutions similar to ours certain ideas of discipline that are necessarily abhorrent to men engaged in scientific work. I refer to high-pressure systems where attempts are made to measure and blueprint each man's activities in terms of mechanical equivalents. This system may be all very well where the object is to turn out clocks, automobiles, or quick-firing guns, but it would be fatal to the best scientific constructive work.

We have already referred in a general way to the fair deal and to efficiency reward. I can only reiterate what I have many times said, that the highest efficiency depends on sympathy and encouragement of individuality combined with consistent unity of purpose. Encouragement of individuality alone might lead to dissipation of energy, but if wisely directed and sympathetically encouraged it can be made to act in unity upon all big problems, and in this way the best and most lasting results can be secured.

To secure a fair deal, therefore, and to assure an efficiency reward there seems no need for consolidation of related lines of work. By centering interest in big problems we can attain our ends much more effectively, for, instead of creating conditions offering opportunity for sharp lines of cleavage, we cross all lines, and thus each man is made to feel that he holds a vital interest in the whole scheme. If the individual worker is made to feel this and assured that he will always have his just due, our future will take care of itself.

THE RELATION OF AGRICULTURAL EXTENSION AGENCIES TO FARM PRACTICES.[1]

By C. Beaman Smith, *Agriculturist*, and H. K. Atwood, *Agent, Office of Farm Management.*

INTRODUCTION.

The past 50 years have seen the rise and development of the agricultural college, the farmers' institutes, and the agricultural experiment stations. Farm papers and agricultural books have been published widely in this country for more than 100 years. The most recent movement along agricultural lines is the county agricultural demonstrator. The question arises as to the efficiency of each of these agencies in actually reaching the man on the farm and influencing his practices.

In order to get some information of a definite character along these lines an investigation was made in four sections of the country, the East, the South, the Central North, and Middle West, where all the above agencies, except the demonstration agent, have long been in operation. Only in the South, however, has the county agricultural demonstration agent been an important factor in agriculture, and there the movement is too recent in most sections to determine its influence.

In this investigation four agents, each familiar with agriculture, three being agricultural college juniors or graduates, were started out, either afoot or on a motor cycle, and asked to visit every farmer on both sides of the road over a route varying from 400 to 700 miles

[1] Issued Mar. 15, 1913.

It is frequently asserted in the press and elsewhere that the agricultural bulletins and the reports of the State experiment stations and of the United States Department of Agriculture are seldom read, rarely saved, and their teachings little practiced by farmers. The statement is frequently made also that the farmers' institute, as usually conducted, is of little value. Just now there is a feeling quite general among business men and agricultural teachers that the agricultural demonstration agent, the man sent out to bring by word of mouth and ocular demonstration to the farmer the best-known farming practices, is the agency probably destined to become the most efficient of all in affecting farm practice.

In order to obtain some definite information on these points it was suggested to Prof. W. J. Spillman, agriculturist in charge of the Office of Farm Management, that a survey might be in order. A general outline of the plan was prepared and the details put into effect by Mr. C. Beaman Smith, of the Office of Farm Management. The manner of conducting the survey and its results have been brought together, and it is believed they are of sufficient interest to warrant publication.—B. T. Galloway, *Chief of Bureau.*

in length. It was believed this would perhaps give a fairer view of what was actually being accomplished than could be obtained by confining the survey to any particular county or group of counties in the various States. The results also are regarded as being more accurate than could have been obtained by sending out circular letters. The routes covered are shown on the accompanying map (fig. 1).

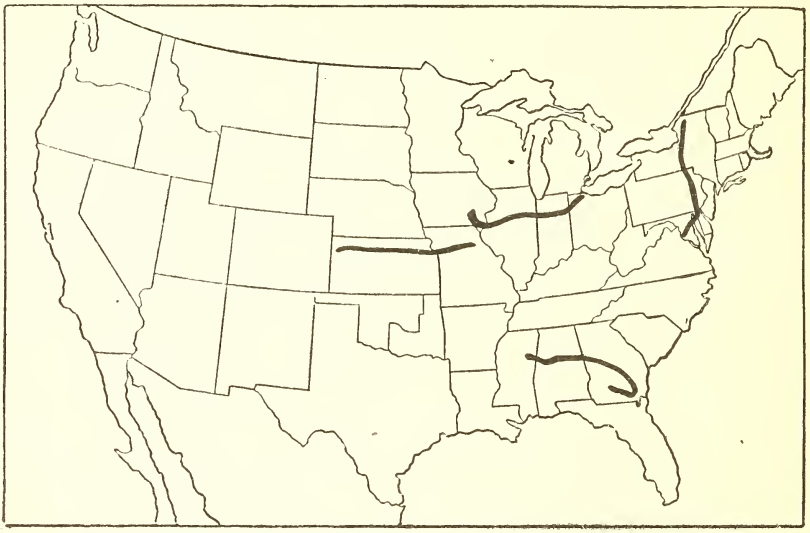

FIG. 1.—Map of the United States, showing by heavy lines the routes taken by the four agricultural survey agents in 1912.

From each farmer along the way sufficient information was secured for the agent to fill in the following blank used in the survey:

Name of farmer, ------.
Post office, ------, county, ------, State, ------.
Owns } ------ acres.
Rents }
Do you receive bulletins or reports of State experiment station? ------.
Do you receive bulletins or reports of United States Department of Agriculture? ------.
Are the bulletins read? ------.
Are they saved? ------.
Have you put into practice anything read in the bulletins? ------.
If so, what? ------.
Are farmers' institutes held in your locality? ------.
Do you attend the meetings? ------.
Have you put into practice anything heard at these meetings? ------.
If so, what? ------.
Have you ever received any personal instruction from agricultural agents of the State? ------. Of the United States? ------.
Did you put these instructions into practice? ------.
What specific thing has been done upon their recommendation? ------.

Do you belong to any agricultural organization? _____.
If so, what is the name of the club or organization? _____.
What is its purpose? _____.
Do you take any farm papers? _____.
If so, what ones? _____.
Any daily papers? _____.
Do you have any agricultural books? _____.
If so, approximately how many? _____.
Which ones have you found most useful? _____.
What factor has been the most helpful in your farming—the agricultural bulletins, the farmers' institutes, the agricultural papers, the farm books read, or the personal work of farm demonstration agents? _____.
Have you ever written to your State institutions or the United States Department of Agriculture for advice on farm matters? _____.
Were the results satisfactory? _____.
What schools have you attended? _____.
How long have you been a farmer? _____.
Name of agent making report, _____. Date, _____.

In the North Atlantic States the work was begun at Norwood, N. Y. The route taken was directly south through central New York and eastern Pennsylvania to Wilmington, Del., then west through central Maryland to Washington, D. C. In all, 1,285 farmers were interviewed in this section. The survey in the South began at Macon, Miss., and was carried on through central Alabama and southern Georgia. In this section records from 1,001 farms were obtained. The agent in the North-Central States began work at Toledo, Ohio, and passed south and west through northern Indiana and Illinois, then north to Mount Pleasant, Iowa. Reports from 707 farmers were received from this section. In the West-Central States the route was directly across northern Kansas and Missouri from Brewster, Kans., to Palmyra, Mo. In this section 705 farmers were visited.

INFLUENCE OF AGRICULTURAL BULLETINS.[1]

In studying the effects of the different agricultural agencies the influence exerted by the bulletins will first be considered. The matters to be noted in this respect are the number of farmers who received the bulletins and reports and so came in contact with them, and the percentages of those receiving the bulletins who read them and carried out in practice some of the ideas presented. In the following table the data obtained are first grouped by sections and then the totals and general averages are given. The percentage of those receiving bulletins is computed on the whole number of farmers visited, but percentages of those reading and practicing are computed on the number receiving such bulletins.

[1]As used here the term bulletin includes bulletins, agricultural reports, circulars, etc., issued by experiment stations or the National or State departments of agriculture.

TABLE I.—*Number and percentages of farmers receiving and reading agricultural bulletins and putting into practice suggestions contained therein.*

Section.	Farmers visited.	Receiving bulletins.		Reading bulletins.		Practicing suggestions of bulletins.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
North Atlantic States	1,285	533	41.5	445	83.5	269	50.5
Southern States	1,001	417	41.7	331	79.4	148	35.5
North-Central States	707	269	38.0	251	93.3	151	56.1
West-Central States	705	384	54.4	323	84.1	205	53.4
Total or average	3,698	1,603	43.3	1,350	84.2	773	48.2

The foregoing table shows that 43 per cent of the farmers visited received State or department bulletins, or both, either regularly or occasionally. Of this number 84 per cent read the bulletins, 56 per cent saved them, and 48 per cent practiced some ideas obtained from them. In all, practically 21 per cent, or about 1 farmer in every 5 of 3,698 farmers visited, were being benefited directly by the agricultural bulletins.

These data would seem to refute the assertion that the bulletins are not read by farmers. They are read by them. Eight farmers out of every 10 in this survey who got them read them and 6 out of every 10 who read them put some of their teachings into practice and could give concrete examples of such practice. This influence of the bulletins, it must be remembered, is only the direct influence. The indirect influence—their use as a basis for articles in the agricultural press and as material for books and for lectures at farmers' institutes, and other farmers' gatherings, thus securing wide publicity—is undoubtedly equally large or larger than the direct influence. This phase of the subject will be again referred to under the discussion of the influence of agricultural papers. It is desired to emphasize here, however, that the agricultural bulletin in itself is a very potent influence in the betterment of agriculture.

Relative to the distribution of State and Government bulletins, respectively, the data obtained are probably too meager to offer more than a suggestion. In the North Atlantic States twice as many farmers received State bulletins as received those from the United States Department of Agriculture. In both sections of the Central States the numbers were nearly equal, while in the South more bulletins were received from the Government than from the State institutions.

Every farmer stating that he had been benefited by bulletins was asked to state specifically some definite thing that had been done as a result of such reading. It was desired to obtain definite ideas that had to some extent been put into practice in the regular farm work. In nearly every case farmers were able to give this information. The

following list, compiled from the reports of the New York farmers, is fairly typical of all the States in proportion to the numbers visited. It shows well the wide variety of matters which the different farmers have been able to obtain from the bulletins and put into actual practice.

SPECIFIC THINGS DONE BY FARMERS AS A RESULT OF READING BULLETINS.

Conserving moisture by tillage, building henhouses, seed testing, feeding dairy cows, oat culture, potato culture, use of feed analyses, feeding poultry, care of horses, care of milk, use of lime, top-dressing, tile drainage, seed-corn selection, use of commercial fertilizer, spraying fruit, crop rotation, thorough cultivation, treating oats for smut, care of poultry, alfalfa culture, corn culture, raising guinea fowls, whitewashing stables, stable construction, strawberry culture, spraying potatoes, using balanced rations, the farm garden, culture of beans and buckwheat, growing soy beans with corn, inoculating clover, cabbage culture, spraying wild mustard, cutting up beef and pork, spraying melons, sugar-beet growing, pasture seeding, growing millet, growing oats and peas together, use of cover crops, treating potatoes for scab, the home mixing of fertilizers, etc.

INFLUENCE OF FARMERS' INSTITUTES.

The farmers' institute plays an important part in the agriculture of many sections. The table below summarizes the results of the survey with reference to this form of extension work.

TABLE II.—*Number and percentages of farmers attending farmers' institutes and putting into practice things learned there.*

Section.	Farmers visited.	Attending institutes.		Practicing suggestions of institutes.	
		Number.	Per cent.	Number.	Per cent.
North Atlantic States	1,285	585	45.5	340	58.1
Southern States	1,001	24	2.4	6	25.0
North-Central States	707	350	49.5	175	50.0
West-Central States	705	146	20.7	75	51.4
Total or average	3,698	1,105	29.9	596	53.9

Of the 3,698 farmers visited, 1,105, or practically 30 per cent, attend farmers' institutes. Of this number 596, or 54 per cent, have put into practice in their farm work suggestions heard at the institute.

Table II indicates that about one farmer in six, as covered by the survey, is being effectively reached by the farmers' institute. If compared by sections, however, it is seen that in the North Atlantic and North-Central States about one farmer in four is effectively reached, while in the Southern States but one farmer in 166 is influenced to action by the farmers' institute, due to the fact that the institute has not been extensively developed in that section.

The low percentage in the West-Central States is due to the small attendance in Missouri, where only 9.9 per cent of the farmers visited attended institutes. The percentages for the other States show little variation. New York has the highest percentage, but even here the difference is not sufficient to warrant special attention.

If the data obtained with reference to the farmers' institutes are compared with those obtained for the bulletins, it is seen that out of 3,698 farmers visited the farm practices of 773 are being modified by suggestions obtained from bulletins, while the practices of but 576 farmers are being modified by suggestions secured from the farmers' institute. Of those who received the bulletins, practically 48 per cent put into practice some of the matters suggested by them, while of those who attended the farmers' institutes practically 54 per cent put into practice something learned there. So far as these data go, therefore, they indicate a like efficiency of the bulletins and institutes in inducing action on the part of the farmer, with the advantage, if any, a little in favor of the institutes.

INFLUENCE OF AGRICULTURAL PAPERS.

The agricultural press shows up in this survey as one of the dominating influences in American agriculture. Practically two out of every three farmers visited take one or more farm papers. Unfortunately no statistics were gathered as in the case of the bulletins and institutes showing in just what way the papers influenced action; but that they did so influence the farmer is convincingly brought out in the question giving the farmer's estimate of the relative value of the various agricultural agencies in aiding him in his farming, discussed elsewhere in this report. Table III summarizes the data with reference to farm papers.

TABLE III.—*Farmers taking agricultural papers.*

Section.	Farmers visited.	Taking farm papers.	
		Number.	Per cent.
North Atlantic States	1,285	893	69.5
Southern States	1,001	454	45.4
North-Central States	707	534	75.5
West-Central States	705	542	76.9
Total or average	3,698	2,423	65.5

The above table shows that 2,423, or 65.5 per cent, of the farmers visited take farm papers. Further tabulation shows that 44.2 per cent of this number receive two or more agricultural papers. The South Atlantic States are lowest in the percentage of farmers taking papers, averaging but 45.4 per cent, while the other sections show little

variation, ranging from 69 per cent in the case of the North Atlantic States to 76.9 per cent in the West-Central States. In comparing the different States it was found that between the States of a section there was little difference in percentages, except in the North Atlantic States. In this section Pennsylvania had only 59 per cent, while the percentages for the other States ranked with those of the central groups at approximately 75.5 per cent.

Compared with bulletins and reports it is seen that the number who received farm papers in the survey was 51 per cent greater than the number who received bulletins, and 119 per cent greater than the number who attended the farmers' institutes. The farmer's estimate of the value of farm papers as compared with bulletins, institutes, etc., will be presented under the general discussion of that subject.

INFLUENCE OF DEMONSTRATION AGENTS.

Only 109 farmers out of the 3,698 interviewed admitted that they had received personal instruction from agents of the agricultural colleges or from the United States Department of Agriculture, and of this number 92 were in the States of Alabama and Georgia. In Alabama every county passed through is employing a county agricultural demonstration agent, while in Georgia 8 out of the 17 counties visited have demonstration agents. In the Northern and Western States only 2 counties visited were employing county agents. In one of these counties, where the agent had been at work only five months, none of the farmers interviewed admitted having been visited by the demonstration agent. In the other county, where the work had been under way two years, 3 farmers were found on the route of the survey who acknowledged having received personal instruction from the county agricultural agent. In Alabama and Georgia the county agricultural agents are employed generally for only about three-fourths of each year, and the number of farmers whom they personally instruct each year is limited in each county to about 40. In addition there are usually about 100 farmers who receive the same instructions, but are not visited regularly by the county agents.

In Alabama, out of 348 farmers visited in 8 counties, 51, or practically 15 per cent, had received personal instruction from demonstration agents. This gave an average in each county of about 6 such farmers encountered on the route of the investigating agents. Of the 51 farmers met, 48, or 94 per cent, put into practice the suggestions made by the demonstration agent. This is far higher than the corresponding percentages for either the bulletins or institutes, and would indicate an efficiency practically double that of the bulletin (48 per cent) and nearly 80 per cent greater than that of the farmers'

institute (54 per cent) in actually inducing the farmer to action. In Georgia, out of 634 farmers visited, 30 had received personal instruction from demonstration agents, 22 of whom, or 73 per cent, put the instructions into practice.

The county agricultural demonstration agent is too recent an appearance in the field of agriculture to draw any definite conclusions from such a survey as this as to his efficiency in influencing farm practice.

Furthermore, there is often a hesitancy on the part of the farmer, and especially on the part of farm managers, to admit having received help from any source other than experience. If outside help is admitted, a manager is usually more willing to give the credit to farm papers or bulletins than to a demonstration agent. This is perhaps especially true and has particular application in the South, where many of the plantations are conducted by hired managers. In this survey 23 out of the 1,001 farmers visited in the South were negro farmers. On the larger plantations where there were several tenants, all working under the same general system, only the landlord was visited in this survey. The comparatively few men encountered, however, in the counties passed through where agricultural agents are employed who were willing to acknowledge having received aid from this source would seem to indicate that the locating of an agent in a county having from 2,500 to 3,000 farmers with the expectation that the agent will personally come in contact with any large number of farmers on their own farms will probably have to be modified. To visit four or five farmers on their own farms in one day and become sufficiently well informed of their needs to permit offering suggestions as to the conduct of the farm is a larger day's work than the average agent will accomplish. Yet even at this rate it would take the agent from two to three years to pay all the farmers of the county a single visit. When it is remembered that substantial advance in agriculture, like advancement in any other business, is a matter primarily of intellectual growth, it is seen that too great expectation must not be made of immediate results from the county agent.

INFLUENCE OF BOOKS AND AGRICULTURAL SOCIETIES.

Out of the 3,698 farmers visited, only 155, or about 1 in 24, possessed a library of farm books. Seldom were they libraries in any extended sense of that word, as the number of books in the possession of a single individual rarely exceeded a half dozen and usually consisted of but two or three. In some instances the statement was made that the books were not read. By agricultural books in this survey is meant books relating to farm matters not published by State or

Government agencies. The number of farm libraries in each of the different sections of the territory covered was as follows: North Atlantic States, 35; Southern States, 23; North-Central States, 51; and West-Central States, 46.

With reference to agricultural societies the data secured from the different sections are as follows:

TABLE IV.—*Farmers belonging to agricultural societies.*

Section.	Farmers visited.	Members of agricultural societies.	
		Number.	Per cent.
North Atlantic States	1,285	368	28.6
Southern States	1,001	96	9.5
North-Central States	707	36	5.0
West-Central States	705	66	9.4
Total or average	3,698	566	15.3

Table IV shows that agricultural societies are quite numerous in the North Atlantic States, but much less so in the other sections studied. The Grange is the most important society in the North Atlantic section. Out of a total of 368 farmers interviewed belonging to any organization in the North Atlantic States, 337 belonged to the Grange. In the other sections various other societies predominate. These are somewhat similar to the Grange in purpose and organization. Of the 96 farmers belonging to agricultural organizations in the South, 93 belong to the Farmers' Union.

Fire insurance and cooperative buying and selling are the chief interests of the larger agricultural organizations encountered. That they exert only a minor influence on agricultural practice is shown by the fact that in the case of the Grange only 1 out of the 337 grangers visited in New York placed the Grange first in the list of helpful farm agencies.

AGENCY MOST EFFECTIVE IN INFLUENCING FARM PRACTICE.

In framing the list of questions asked in the survey it was desired to get the farmer's own estimate of the relative value of each of the more usual agricultural educational agencies, such as the agricultural bulletins and reports, the farmers' institute, farm papers, agricultural books, and demonstration agents. A goodly number gave no preference, stating that all were equally valuable. Others, while expressing a preference, were careful to state that they also secured much help from the other agencies and would not want to be deprived of any of them. The rather surprising fact brought out in this connection was that 1,616 farmers out of the 3,698 visited claimed that none of the

agencies enumerated was of any benefit and that only experience in farm work counted. The preference shown for each of the agencies is shown in Table V:

TABLE V.—*Number of farmers stating agency most helpful in their farming.*

Section.	Farmers visited.	Preferring bulletins.	Preferring institutes.	Preferring farm papers.	Preferring demonstration agents.	Stating all agencies equally valuable.	Stating experience only valuable teacher.
North Atlantic States	1,285	72	76	626	.....	55	444
Southern States	1,001	56	2	242	22	7	670
North-Central States	707	39	45	238	2	58	318
West-Central States	705	68	10	386	.....	47	184
Total	3,698	235	133	1,492	24	167	1,616
Percentage	.....	6.3	3.6	40.3	.6	4.5	43.7

The table as it stands shows that about 6.3 per cent of the farmers visited placed the agricultural bulletins and reports first on the list of helpful agricultural agencies, 3.6 per cent placed the farmers' institute first, 40.3 per cent favored the farm papers, 4.5 per cent regarded all agencies as equally valuable, and 43.7 per cent stated that none was helpful. The farmers who had come in contact with demonstration agents were too few to warrant attaching any significance to the percentage for this item.

The noteworthy matters are the large number who placed the farm papers first and the still larger number who placed no value whatever on any of the agencies. As a matter of fact, however, the man who neither receives the bulletins, takes a farm paper, nor attends the farmers' institutes is not in a position to judge of the value of such agencies. Many of the 1,616 farmers who denied the worth of these agencies fall within this class. Some, however, attended the institutes, took farm papers, and received the bulletins, and still said they were not helped in their farming by any of these agencies. This large percentage, however, shows a marked conservatism toward agricultural extension agencies and undoubtedly indicates the cause of the reluctance of farmers in some sections to support in any marked degree the present country-wide movement looking to the location of trained agriculturists in counties to advise with farmers in the improvement of their agriculture, a movement strongly supported everywhere by both business and commercial interests.

In order that there may be a fair comparison as to the merits of different agencies it is essential that the one making the comparison be in touch with each agency compared. There were 469 farmers who not only received the bulletins, but also attended farmers' institutes and took farm papers, thus being acquainted with all three agencies.

Of this number 21 per cent give the bulletins first choice in the list of most beneficial agencies, 14 per cent placed the institute first, while the remainder, or 65 per cent, give first place to the farm paper. This comparison indicates that, with farmers who are competent to judge, those who prefer the newspapers are three times as numerous as those who prefer the bulletins and practically five times as many as those who place the farmers' institutes first.

The reasons given for the wide popularity and greater usefulness of the agricultural press may be briefly summarized as follows: The papers come regularly and often, while the bulletins are sent out very irregularly and infrequently. The bulletins are read once and become old matter, while the paper contains fresh matter or a new presentation of old matter each week. The papers come directly to the farmer, but he has to go to the institute, which is held at best only a few times a year and perhaps then during a busy season or at a considerable distance.

Although the bulletins are regarded as the most accurate, they generally deal only with some special subject, while the paper in each issue treats of a variety of agricultural subjects. Because of this specialization many of the bulletins do not deal with any subject in which the individual farmer is interested, and while they might be valuable to the right person, they are of little value to the one receiving them. Many farmers also claim, as is probably true, that the farm papers contain all the essential information contained in the bulletin or heard at the institute, and the subjects are concisely treated and are usually written in language that the farmer can understand.

The data secured were tabulated to learn whether those receiving the bulletins and attending the institutes were thereby induced to take farm papers. The results show that 83 per cent of the 1,603 farmers receiving the bulletins and 88.5 per cent of the 1,105 attending the farmers' institutes also took farm papers.

If the results secured in this survey are typical of the relative values placed by farmers over the country generally upon the various agricultural agencies under consideration, it would seem that the agricultural research institutions of the country should make systematic use of the agricultural press as one of the most efficient means of reaching the farmer. Not only this, but special endeavor should be made by research institutions to keep in sufficiently close touch with the agricultural papers to see that the matter which goes to make up the farm paper is accurate and reliable. This is perhaps as much the duty of such institutions as is the publication of bulletins.

With reference to the influence of demonstration agents it was found that out of the 92 farmers receiving such instructions in the

Southern States, 62 of them also took farm papers and received agricultural bulletins. Of this latter number, 32 favored farm papers, 15 favored demonstration agents, and 7 favored the agricultural bulletins; 1 decided in favor of agricultural books, while 7 said that none of the agencies was of any assistance. This again brings out the popularity of the agricultural press.

VALUE OF RESEARCH INSTITUTIONS AS A SOURCE OF INFORMATION.

Two hundred and fifty-five farmers, or 6.9 per cent of those visited, had written for advice either to one of the experiment stations or to the Department of Agriculture. Practically 90 per cent of those writing expressed themselves as well pleased with the treatment received and the results obtained from the advice given.

EDUCATION AS RELATED TO THE USE MADE OF BULLETINS.

In connection with these statistics it was desired to see what influence, if any, education has upon the use of agricultural bulletins and the number of those who reported no help from any agency. Tabulation of the data collected shows that of the 3,258 farmers who had attended only the common school or no school at all, 1,316, or 40 per cent, received bulletins, of which number 590, or practically 45 per cent, practiced something read therein. Of the 440 possessing higher education, 287, or 65.2 per cent, received the bulletins, and 64 per cent practiced matters contained therein. Of the farmers having a common-school education, 1,531, or practically 46 per cent, reported no help from any agency, while of those having preparatory or college education only 85, or 19.4 per cent, reported no benefit from such sources.

ARE THE RESULTS OF THE SURVEY REPRESENTATIVE?

The results secured in this survey may or may not be typical of conditions as they exist over the country generally. Only about 3,700 farmers were interviewed out of a possible 6,000,000. In so far, however, as the bulletins, agricultural papers, books, and agricultural societies are concerned, parallel data were secured in all four sections of the country, and the conclusions drawn from any one section would be practically identical with any other one. In the three sections of the country where it is fair to compare the data with reference to farmers' institutes, conclusions could be drawn from any one that would apply to either of the others. Many more data are necessary in order to justify any conclusions with reference to demonstration agents.

SUMMARY.

Of the 3,698 farmers personally interviewed in this survey, about 1 farmer in every 1.5 visited takes a farm paper, 1 in 2.3 receives agricultural bulletins, 1 in 3.3 attends farmers' institutes, 1 in 6.5 belongs to some agricultural organization, 1 in 14.5 writes to agricultural institutions for advice, 1 in 23.8 has a few farm books, 1 in 11 gets personal instruction from county demonstration agents in the South, and 1 in 159 gets personal instruction in the North and West. One farmer in every 2.3 stated that none of the above agencies was helpful in his farming.

Of the farmers receiving bulletins, 48 per cent put into practice something learned from them, 54 per cent of those attending institutes put into practice suggestions made there, while 79 per cent of those receiving instruction from demonstration agents in the South put into practice the instructions given.

The replies from 469 farmers who received agricultural bulletins, attended farmers' institutes, and took farm papers indicate that 21 per cent of this number favor the bulletins as the most helpful source of information on farming, 14 per cent favor the farmers' institute, while 66 per cent favor the farm papers.

In the case of the 62 farmers who received instruction from county agricultural agents, took farm papers, and received bulletins, practically 11 per cent favored the bulletins, 24 per cent favored the demonstration agents, while 52 per cent favored the farm papers. So far as this survey is an indication, the agricultural press would seem to be at present the most efficient of our agricultural extension agencies in reaching the farmer.

[Cir. 117]

○